THE CHITON FAUNA (POLYPLACOPHORA) OF PORT STEPHENS, NEW SOUTH WALES.

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[Read June 12, 1924.]

Plate XXXI. (in part).

Port Stephens, as far as we have been able to ascertain, has never been thoroughly explored for Polyplacophora. The only record, we were aware of, of work done in this neighbourhood is a note by A. F. Basset Hull, in his paper on "New Australian Polyplacophora and Notes on the Distribution of certain Species" (Austr. Zool., vol. iii., 1923), in which he states, *inter alia*, "I have examined Port Stephens . . .", but no further mention is made. Subsequently, in the same paper (p. 164), in reference to *Rhyssoplax carnosus*, Angas, he writes, "It has been my good fortune to examine . . . examples from Port Stephens." Apparently these are the only published notes on the chitons of this vicinity.

The advance party, consisting of W. L. May and the writer, reached Port Stephens on October 4, 1923, and were joined by Messrs. Albert E. J. and H. W. Thackway two days later, making our headquarters at Nelson Bay, which is about 90 miles N.W. by N. of Sydney and about 20 miles north of Newcastle. The reefs upon which the Polyplacophora were collected consist of weathered felspar porphyry.

Owing to the limited time at our disposal and the long length of coast which had to be examined, our attention was confined to the southern shore between Dutchman Bay and Tomaree (South) Head, and the open sea coast, from the latter head to Fingal Point, a distance in all of about 15 miles. The advance party had noted some rocky points west of Nelson Bay from the deck of the little steamer, and as far as the unfavourable tides would permit, spent the first two days in investigating the neighbourhood for promising spots. Several places were tried westward (further up the harbour), but the results were not very encouraging; this was probably due to the dirty character of the water.

On the arrival of the Messrs. Thackway, by dividing the party into two, the coastline to Tomaree Head was explored. The real work began on October 8, taking advantage of the spring tides which reached their maximum low point on the 10th idem.

As the Thackways were able to continue their stay for about a fortnight after those of us from the other States had left, they were able to extend the investigation to the open coast outside the heads, and to add very materially to the sum-total of the material collected. My heartiest thanks are due to Albert E. J. Thackway and W. L. May for the loan of material, and to the former for the use of his very copious notes on the material collected and the ground examined.

Reefs at each end of Nelson Bay were found to be moderately good; sixteen species being secured on the western reef, between the old wharf and Dutchman Bay, and eighteen species on the eastern. The western reef was remarkable for the large colonies of excellently preserved specimens of *Onithochiton quercinus*, as was the eastern for numbers of an exceptional colour variety of *Haploplax lentiginosus*. A cursory examination was made of the reef around Nelson Head,

with favourable results; time was too limited for as thorough an examination as is desirable. Further investigation will probably prove this point to be one of the richest in the harbour. The coast between the eastern end of Shoal Bay and Tomaree Head was most disappointing, although a whole day was occupied in prospecting it, nothing worthy of being noted was taken over a distance of approximately of one mile.

Along considerable strips of this coast, many of the stones examined were bare of apparent life, and in numerous instances large arcas of seemingly good ground werc found to be quite barren. The headlands at False Bay, on the open ocean, were even poorer than at Tomarce Hcad; the causes of the apparent paucity of life in these localities seem obscure and are worthy of careful investigation.

The most profitable ground was located at Fly Point and extended for nearly half a milc between Nelson Bay and Little Bay. Only a small portion of this fine ground was touched, but it was found extremely rich both in species and in examples, as the appendcd notes testify. Examples of every genus recorded from New South Wales, with the exception of *Choriplax*, *Liolophura*, and *Tonicia*, were taken within a distance of less than a quarter of a mile. The results of the united labours of our party were most gratifying, yielding, as they did, a wealth of specimens, including most of the recorded fauna in New South Wales; many individual specimens are of exceptional beauty. One new species of *Acanthochiton* is described and another member of the same genus is added to the fauna of the State; 28 species besides named varieties were secured. The entire absence of *Liolophura gaimardi*, Blainville, which is such a common species at Port Jackson, is remarkable.

All mcasurcments quoted in this record are of dried specimens.

Family Lepidopleuridae, Pilsbry.

Lepidopleurus badius.

Lepidopleurus badius, Hedley and Hull, Rec. Austr. Mus., vii., 1909, p. 260.

Specimens of this species were rare, half a dozen in all bcing taken, ranging from 3×1·5 mm. to 5×2·5 mm. The examples were mostly found on small stones cmbcdded in shell-sand and in comparatively shallow water. One specimen was taken in a small rock pool near high-tide mark. A wide range of colour variation was shown, the scries ranging from a brick-red to a light straw. This species was only found within a very limited area on Fly Point.

Family Callochitonidae, Thiele.

Callochiton platessa.

Chiton platessa, Gould, Proc. Bos. Soc. Nat. Hist., ii., 1864, p. 194.

Callochiton platessa, Gould, of Pilsbry, Man. Conch., xiv., p. 49, pl. 10, figs. 1-5.

Fairly common at Fly Point and on the reef between Nelson and Dutchman Bays. A good series in all stages of growth, the largest specimen taken measured 28×17 mm. All typical specimens, the various shadcs of red and grcen assimilating with the colours of the encrusted rocks upon which they were found.

Callochiton platessa, Gould, var. fossa, Ashby.

(Trans. Roy. Soc. S. Austr., vol. xlvi., 1922, p. 19).

A few specimens of this pitted form were found.

Family Ischnochitonidae, Pilsbry.

Ischnochiton (Lineolatus) crispus.

Chiton lineolatus, Blainville, Dict. Sci. Nat., vol. xxxvi., p. 541.

Chiton crispus, Reeve, Icon., pl. 19, f. 120, May, 1847.

Ischnochiton lineolatus crispus, Rv., of Ashby, Trans. Roy. Soc. S. Austr., vol. xliv., 1920, pp. 273, 274.

This sub-species, although by no means rare, was not as plentiful as might have been expected. The specimens taken were mostly comparatively small, but a very beautiful series of colour variations was obtained. The largest measures 30×14 mm. Examples were met with on all reefs between Dutchman Bay and Shoal Bay; none were seen at Tomarce Head, or on the coastal reefs. It is worthy of note that in the locality under review, *crispus* was principally obtained in fairly deep water.

Ischnochiton proteus.

Chiton proteus, Reeve, Conch. Icon., iv., 1847, pl. 8, f. 11; *C. divergens,* Reeve, *l.c.,* pl. 18, f. 44.

This species and the following one, *fruticosus,* are the commonest chitons in the district. Numerous examples were found in every place explored and in every stage of growth. Some stones examined were literally covered with these. Very large and clean specimens were frequently taken and a remarkable series of colour variation embracing ground colours of greens, whites, reds, and browns, with varying patterns and colour markings, was observed.

Ischnochiton fruticosus.

Chiton fruticosus, Gould, Proc. Bos. Soc. Nat. Hist., ii., p. 142, 1846.

Equally numerous with the preceding species and found at all levels, from half tide to deep water. A few examples of a novel green variety, with burnt-umber dorsal region and brown girdle, were secured.

Ischnochiton examinandus.

Ischnochiton examinandus, Hull, Austr. Zool., vol. iii., pt. iv., 1923, p. 160, pl. xxv., f. 1-4.

Comparatively rare; about a dozen specimens in all were collected, the sizes varying from 7×4·5 mm. to 15×8 mm. Of these, three were similar in colouration to the type, the remainder show general schemes of green, orange, or brown. Slight differences in the shape occur, some being more elongate than the others.

Ischnochiton (Haploplax) smaragdinus.

Lophyrus smaragdinus, Angas, Proc. Zool. Soc., 1867, p. 115, pl. 13, f. 28.

Ischnochiton smaragdinus, Pilsbry, Proc. Ac. Nat. Sci., Phil., 1894.

This species is very common at all places examined between Nelson Bay and Fly Point, inclusive, and was one of the few species found in the neighbourhood of Tomaree Head. The largest specimen taken was 23×13 mm., and the variation in colour scheme and pattern was very great.

Ischnochiton smaragdinus, Angas, var. picturatus, Pilsbry, Proc. Ac. Nat. Sci., Phil., 1894, p. 72.

Very numerous in the same localities as the typical form, but none were seen on the open coast; they were found both in deep water and in rock pools above low-tide mark.

Ischnochiton smaragdinus, var. funereus, n. var.

A very distinctive variety of *Haploplax smaragdinus,* in which the whole of the tegmentum is of a uniform black, without any colour relief, and the girdle is consistently of a yellow tint, varying in shade from light straw to golden-yellow, transversely banded at irregular distances, with narrow bands of a darker

tint, suggesting shadows. The sculpture and girdle scales are similar to typical shells.

As this variety is so distinct and exceptional in colour to any other New South Wales shell, it seems worthy of a distinctive name. I therefore suggest the name *funereus* for this variety. Besides the few examples taken at Port Stephens, both Thackway and Hatcher have taken it at Long Reef, and the former has taken it at Merewether, Botany Bay, Bulli, and Port Jackson; the writer also found an example, 17 mm. in length, on the one occasion he has visited Vaucluse. The type measures 12×7 mm., is from Long Reef, and was given to me by Mr. W. H. Hatcher.

ISCHNOCHITON (HAPLOPLAX) LENTIGINOSUS.

Chiton lentiginosus, Sowerby, Mag. Nat. Hist., iv., 1840, p. 293.
Chiton lentiginosus, Reeve, Conch. Icon., iv., 1847, pl. 24, f. 165.
Ischnochiton lentiginosus, Pilsbry, Proc. Ac. Nat. Sci., Phil., 1894, p. 73.

Very common on all reefs. The specimens collected are of an unusual colour pattern for this species, and may probably be regarded as a local variety. Nearly all the examples are confined to different shades of brown. The Port Stephens form has an irregular, dark, dorsal stripe on all valves, which is margined on either side by a lighter band, the whole being maculated with the typical blue spots and lines. Examples from Bulli and Long Reef (near Manly) mostly have a monochrome ground, decorated with the usual blue marks.

ISCHNORADSIA AUSTRALIS.

Chiton australis, Sowerby, Mag. Nat. Hist., iv., 1840.
Ischnochiton australis, Reeve, Conch. Icon., iv., 1847.

In numbers this species was second only to *proteus* and *fruticosus;* specimens were collected at all points, but in common with other species, were scarce around Tomaree Head.

Subfamily CALLISTOPLACINAE, Pilsbry.

CALLISTOCHITON ANTIQUUS.

Chiton antiquus, Reeve, Conch. Icon., iv., 1847, pl. 25, f. 169.

A long series was obtained at Fly Point and Nelson Head; these are all of the usual form and are nice clean examples. This chiton was quite difficult to locate owing to its colour and sculpture, assimilating, as it does, so well with the rocks upon which it is found.

Family MOPALIIDAE, Pilsbry.

PLAXIPHORA ALBIDA.

Chiton albidus, Blainville, Dict. Sci. Nat., vol. xxxvi., 1825, p. 547.
C. costatus, Blainville, *l.c.,* p. 548. Discussed by Iredale, Proc. Mal. Soc., ix., pt. ii., p. 96.
Plaxiphora albida, Blainville, of Ashby, Trans. Roy. Soc. S. Austr., vol. xlvi., 1922, pp. 575, 576.

Over a score of specimens were taken, but this species is not plentiful in the portions of the coast examined. The shells on the average are smaller than those found further south. All specimens collected were from levels between high and low-tide marks; none were seen below the latter, and all were covered with algae.

NOTE.—As I have stated in several of my earlier papers, it has been found that examples of members of this genus from Queensland, in the north, round the south coast of Australia, and up the west coast of Western Australia, as far as Dongarra, show so much variation both in shape and sculpture, with apparent

intermediates, that it has seemed best to make no attempt to define separate species, until a very large series was available from all parts of the Australian coastline.

The examples from Port Stephens form a very welcome addition to what is already a very representative collection. The writer's experience very closely coincides with the views expressed by Iredale in the paper above cited.

Family ACANTHOCHITIDAE, Pilsbry.

ACANTHOCHITON GRANOSTRIATUS.

Acanthochites granostriatus, Pilsbry, Naut., vii., p. 119, 1894.

Acanthochiton granostriatus, Pilsbry, of Ashby, Trans. Roy. Soc. S. Austr., vol. xliv., 1920, pp. 287, 288.

This species was not numerous, but a fair series was collected, mostly showing brighter colouration than specimens found in South Australia.

ACANTHOCHITON PILSBRYI, MAUGHANEANUS.

Acanthochiton pilsbryi, Sykes, Proc. Mal. Soc., Lond., vol. ii., pt. 2, 1896.

Acanthochiton maughani, Torr and Ashby, Trans. Roy. Soc. S. Austr., 1898, p. 12.

Acanthochiton pilsbryi maughaneanus, Ashby, Trans. Roy. Soc. S. Austr., vol. xliii., 1919.

A few very fine specimens were obtained measuring up to 12×4·5 mm. On the way to Port Stephens some of our party broke their journey at Point Clare, on Brisbane Water, and there found three examples of this shell in which the granules were more irregular in shape than is normal.

ACANTHOCHITON VARIABILIS.

Hanleya variabilis, Adams and Angas, P.Z.S., 1864, p. 194.

Acanthochites variabilis, Adams and Angas, of Pilsbry, Proc. Ac. Nat. Sci., Phil., 1894, p. 184.

This widely distributed species was by no means common at Port Stephens; one or two of the specimens collected show the bright blue colouration which seems to be a feature of those collected by Hatcher at Long Reef, near Manly.

ACANTHOCHITON KIMBERI.

Acanthochites kimberi, Torr, Trans. Roy. Soc. S. Austr., vol. xxxvi., 1912.

This shell has not previously been recorded from the State of New South Wales, and it was an unexpected pleasure to meet with it so far from the type locality in South Australia. Several very fine specimens were secured, the largest measuring 18×6 mm.; the previously known largest specimen is one collected by Mawle, in Port Arthur, in Tasmania, that measures 16·5×7·5 mm.

As it is not difficult to confuse this shell with the variety of *Acanthochiton retrojectus,* named by the writer *pustulosus,* Ashby, the following comparison should be helpful. In *pustulosus,* the girdle fringe is often not visible, but in larger specimens, when present, the fringe is shorter and spicules more slender than in *kimberi.* In the sculpture, the large granules of *pustulosus* are always strongly convex and strongly elevated, in *kimberi* the larger granules are flat though very irregular in size, often very elongate. Under a magnification of 65, the minute grains clothing the girdle of *retrojectus* and its variety *pustulosus* are larger than those in *kimberi,* and seem to coalesce in irregular masses; whereas in *kimberi,* in addition to the grains being more minute, they lie more smoothly and are so arranged in groups, that collectively they form shallow rings with a hole or crater in the centre.

A very beautiful variety was secured by Thackway, in which the first two valves are white; valves 3, 4, and 5, red; valves 6 and 7, white with red dorsal area; and tail valve dark.

ACANTHOCHITON RETROJECTUS.

Acanthochites retrojectus, Pilsbry, Naut., vii., p. 107, 1894.

This little species was not common, but specimens were taken up to 14×5·5 mm.

ACANTHOCHITON RETROJECTUS, var. PUSTULOSUS.

Acanthochiton retrojectus, var. *pustulosus,* Ashby, Trans. Roy. Soc. S. Austr., vol. xlvi., 1922, pp. 15, 16.

Several examples of this striking variety of *retrojectus* were met with; in some the large granules are developed at a very juvenile stage, in others the sculpture is quite typical of *retrojectus* until the shell is more than half grown, when the very coarse, highly elevated grains are produced.

Acanthochiton thackwayi, n. sp.

Pl. xxxi., figs. 1, 2.

General Appearance.—Broad, girdle almost entirely covered by the long extruded spicules, a dense rather long girdle fringe, shell highly arched and rounded, side slope curved, median valves beaked.

Colour.—Pale creamy-brown, dorsal area of valve 2 rose pink, spicules similar in colour to the valves.

Anterior Valve.—This valve is unusually elevated, slope curved and steep, 5 ray ribs or undulations, the two lateral ones being shallow, the three in the centre ones strongly elevated, closer together and with deep troughs between them. The ribs are decorated with two rows of closely packed, small, rounded, cream-coloured granules.

Posterior Valve.—Small, mucro not raised, median or postmedian, posterior slope steep, covered with closely packed, cream-coloured granules. Dorsal area pinnatifid and in proportion to the size of this valve, broad, dark coloured; the pleural area of this valve is decorated with small closely packed granules, placed in longitudinal rows.

Median Valves.—Broad, elevated, arched, side slope curved, posterior margin strongly beaked, the shell bending outwards again towards the girdle, quite as far, if not further, than the beak. The dorsal area is broadly wedge-shape, the beak is a little rugose, but this may be due to slight erosion; under a pocket lens, only the posterior half of this area is smooth, and from there, anteriorly, the area appears strongly grooved, but under a Zeiss binocular, mag. 65 times, this apparent grooving is found to be only simulated by an alternation of dark, subcutaneous, longitudinal lining with white opal-like lining, so that, except for transverse growth lines, this area is smooth. This area is strongly pinnatifid, four of the lateral "teeth or pinnae," which are cream-white, can be counted on each side of the dorsal area; from each of their apices commences a more or less longitudinal row of small closely packed granules; the pleural and lateral areas are not separable, both being similarly sculptured with bowed, more or less longitudinal, rows of minute, bead-like, closely packed granules; these granules are so closely packed in the rows that, under a pocket lens, they appear everywhere touching, and the rows are so close to one another that there is no well-defined suture between them. The grains towards the outer margin are but little larger than those nearer the dorsal area. Under a binocular with 65 magnifications the granules are less bead-like, are not hemispheres, as they appear under a high-power pocket lens, but are strongly raised, circular, convex granules, the curvature being flatter in some than others; also, they rarely imbricate, although so close together, and are usually separated.

The interspaces between the grains, although the shell has been boiled for some time, still seem partially filled with the most minute grains of sand.

Girdle.—Is furnished at the sutures with hair tufts of exceptionally long, slender, glassy spicules, and under mag. 65 times, shorter, extremely slender spines are interspersed amongst them. The girdle fringe is very dense, seemingly composed of three rows of spicules; the rest of the girdle is covered with coalesced, minute grains.

Measurements.—The type is 9×4·5 mm., including the hair tufts; shell itself only 7×4·5 mm. Thackway's specimen 9·5×5 mm.

Habitat.—In addition to the type, which was collected by the writer at Fly Point, a second specimen was taken by Mr. Albert E. J. Thackway at the same spot.

In conclusion.—This species is distinguished from *bednalli* by the dorsal area being pinnatifid and smooth, although simulating grooving by subcutaneous lining, and by the granules being circular and convex, whereas in *bednalli* they are longer and flat-topped. The same characters still more widely differentiate it from *granostriatus*.

Acanthochiton (Notoplax) costatus.

Acanthochites costatus, Adams and Angas, P.Z.S., 1864, p. 194.

Macandrellus costatus, Dall., Proc. U.S. Nat. Mus., i., p. 81.

Notoplax costatus, Adams and Angas, of Ashby, Trans. Roy. Soc. S. Austr., vol. xliv., 1920.

Three specimens of this shell were taken; the largest 19 mm. long, girdle evenly but not densely covered with short spicules. The ribs on valves in the smallest specimen are considerably less raised than those of the other two. In Tasmania all the examples seen from Port Arthur have shallow ribs, whereas those taken in the D'Entrecasteaux Channel all have coarse ribs.

Family Cryptoplacidae, Dall.

Cryptoplax rostratus.

Chitonellus rostratus, Reeve, Conch. Icon., f. 6, 1847.

Cryptoplax torresianus, Rochebrune, Bull. Soc. Philom., Paris, 1881-1892, p. 195.

Cryptoplax rostratus, Rv., of Ashby, Trans. Roy. Soc. S. Austr., vol. xlvii., 1923.

This chiton was very numerous, several specimens being taken up to 63 mm. in length (dried specimens); in life they would have measured considerably more. While the girdles of most were densely clad with normal, brown spicules, a few had orange-brown spicules, making them very conspicuous in the water, also, in a few examples, the dorsal area in each valve is porcelain-white, the rest of the valves brown; in these the dorsal area, especially at the beak, is touched up with pink.

In my discussion of this species in the paper cited above occur these words: "Also the valves *C. rostratus,* even in the fully adult shell, still touch one another." Having now examined the large number of specimens taken at Port Stephens, I find I have to qualify this statement, for in the very large specimens, after valve 4, the valves are distinctly spaced; but this feature, which is normal in *C. striatus,* Lamarck, does not seem to occur in *rostratus* until reaching extreme senility. The granular character of the sculpture is retained even in the largest specimens, but the granules are less bead-like and more elongate than is the case in younger examples.

Family Chitonidae, Pilsbry.

Rhyssoplax jugosus.

Chiton jugosus, Gould, Proc. Bos. Soc. Nat. Hist., ii., p. 142, 1864.

Rhyssoplax jugosus, Thiele, das Gebiss der Schnecken, vol. ii., p. 368.

A very fine series with wide variation in the colour pattern was taken.

RHYSSOPLAX COXI.

Chiton coxi, Pilsbry, Proc. Ac. Nat. Sci., Phil., 1894, p. 85.

A fair number were secured; most of them were more or less normal, olivaceous, flecked with cream and pink markings. In one remarkable specimen, measuring 15×9 mm., all the valves, other than valve 2, are brilliant, absinthe-green, with a bright pink spot at the apex of the anterior valve and at the beak of the other valves; valve 2 is ox-blood-red, and the whole of the girdle is broadly and irregularly banded in these colours, with the addition of cream-white and three or four narrow, very dark, reddish bands. Altogether, it is perhaps the most brilliantly coloured chiton I have ever seen. (Ridgway's Colour Standards, pls. xxvi. and i.)

RHYSSOPLAX CARNOSUS.

Chiton carnosus (Carp. MSS.), Angas, P.Z.S., 1867, p. 222.

Rhyssoplax jacksoniensis, Ashby, non *Chiton limans,* of Sykes, Proc. Roy. Soc. Vict., 33 (n.s.), 1921.

Rhyssoplax carnosus, Angas, of Hull, Austr. Zool., vol. iii., pt. iv., 1923.

Amongst the series collected were some of the most brilliantly coloured forms yet obtained, ranging from normal, mottled olivaceous, through cream, with three or four dark, almost black, valves to pink, brick-red, and orange.

RHYSSOPLAX VAUCLUSENSIS.

Chiton vauclusensis, Hedley and Hull, Rec. Austr. Mus., 1909, p. 261, pl. lxxiv., figs. 19-23.

Several examples of this fine and rare chiton were collected, Port Stephens being an entirely new locality. I am also glad to be able to record that my correspondent, William H. Hatcher, has also been successful in finding it at Long Reef, near Manly. Thus, although still a rare shell, its habitat is slowly yet surely being extended.

RHYSSOPLAX TRANSLUCENS.

Chiton translucens, Hedley and Hull, *l.c.*

A good series of exceptionally fine specimens of this beautiful chiton was obtained measuring up to 41×21 mm. Most of them are coloured with soft shades of flesh-pink, variously blotched with olive; only one or two were of the green shade, with cream markings, mentioned in the description of the type.

SYPHAROCHITON PELLIS-SERPENTIS.

Chiton pellis-serpentis, Quoy and Gaimard, Zool. Astrolabe, iii., 1835, p. 381, pl. 74, figs. 17-22.

Sypharochiton pellis-serpentis, Q. and G., of Thiele, *l.c.,* p. 365.

In addition to our general research, two whole days were entirely devoted by the Messrs. Thackway in an endeavour to locate this species, and their labours were finally rewarded, when Mr. H. W. Thackway found a single specimen, near low water-mark, on the reef at the eastern end of Nelson Bay. This was almost the last chiton obtained during the visit. The search extended over the whole of the suitable ground between Dutchman Bay, in Port Stephens, and Fingal Point, on the open coast, covering a distance, in all, approximately, of 15 miles. With the exception of this single specimen, which Mr. Thackway has generously presented to the writer, no other example of this species, or of its associate in New South Wales waters, *Liolophura gaimardi,* Blainville, was met with; the specimen taken is typical of the form found at Port Jackson with the strong longitudinal ribbing; in southern Tasmania such strongly sculptured forms are far less common than the smoother ones.

Some additional notes on this chiton seem worth while. This species, in both New South Wales and Tasmania, is found from half-tide almost to high

water-mark, and is common throughout the southern coasts of the former State; and on the north, east, and southern coasts of the latter State. Eroded specimens exposed to sun and air below high tide-mark may be found in large colonies within the areas named, in both States, but well-preserved specimens are moderately rare.

Thackway, May, and the writer have each been able to take a fair series of perfect specimens in their respective localities, from the underneath of large boulders, or in fissures, or caverns, into which the sun never penetrates, *i.e.*, places which, although above low water, are constantly damp or moist, and comparatively dark.

North of Sydney, *pellis-serpentis* seems to become rarer. At Mereweather, about four miles south of Newcastle, during October, 1923, Thackway made a search for this species along two miles of coast, when only three specimens were found. At Point Clare, on Brisbane water, north of the Hawkesbury, the writer took several specimens in a fair state of preservation, but it was not common there. In face of these evidences and the fact, that with all our searching, Port Stephens only yielded us one specimen, it seems probable that the Port is the northern limit of its range. Messrs. Iredale and May distinguished the Tasmanian forms of this shell, under the designation of *Maugeanus;* while I think the better way would be to consider them mere varieties of the New Zealand shell, if students prefer to consider the Tasmanian shell a geographic race, I suggest that the somewhat more highly sculptured form, found in New South Wales, be distinguished by the subspecific name of *septentriones*, a name suggested by the more northern habitat.

Subfamily Lioplhurinae, Pilsbry.

Lorica volvox.

Chiton volvox, Reeve, Conch. Icon., pl. 6, f. 31, 1847.

This species was not common, less than a score of specimens being found, the largest measuring 60 mm. in length; they were typical of Port Jackson shells.

Loricella torri.

Loricella torri, Ashby, Trans. Roy. Soc. S. Austr., vol. xliii., 1919.

A long series was collected ranging from quite juveniles up to 52×36 mm. Shades of green and pink are quite common in the girdles, the lateral areas and anterior valves, in some, show strong granules, in others the shell is almost smooth. The girdle, in some, was thickly clothed with branching spicules or setae, in others this feature was much less in evidence. In none of the fine series examined was there any evidence of the "spear-headed spicules" discovered by the writer, and which are so striking a feature of the South Australian shell *Loricella angasi*, Adams and Angas.

Onithochiton quercinus.

Chiton quercinus, Gould, Proc. Bos. Soc. Nat. Hist., ii., p. 142.

A fair series of this Onithochiton was secured, some showing very beautiful colour markings.

Note.—I have followed Pilsbry in the foregoing order, but note that Thiele places the two genera, *Lorica* and *Loricella*, under the Family Ischnochitonidae, and the Genus *Onithochiton* under the Subfamily Acanthopleurinae, as a group under the Family Chitonidae.

Also, I would add the following record, which, although it has nothing to do with the fauna of Port Stephens, it is, nevertheless, an interesting record

belonging to the same State, and will be of interest to other workers. The only occasion upon which it has been possible for the writer to visit that famous collecting ground for chitons, the Bottle and Glass Rocks, at Vaucluse, was on September 25, 1923, and was rewarded by two good finds. One was a very fine specimen of *Acanthochiton kimberi,* Torr, measuring, when dry, 14×6·5 mm., but when alive nearly double the width, owing to the extension of the girdle, a feature that is little seen in the small specimens from South Australia. This was an altogether new find for the State of New South Wales. On another broken shell was another great find, a very fine specimen of *Lepidopleurus* which had never before been seen by the writer, but was immediately recognised as being Hull's new *L. puppis,* which up to the present is only represented by a very few examples. This specimen measures 13·5×6 mm. and is in perfect order.

DESCRIPTION OF PLATE XXXI.

(For description see page 327.)